

### REMARKS

Claims 1-21, 25, 32, 35 and 40 have been canceled, claim 22, 34 and 41 has been amended and no new claims have been added or canceled by way of this response. Thus, claims 22-24, 26-31, 33-34, 36-39 and 41-45 are currently pending and presented for examination. Applicants respectfully request reconsideration and allowance of the pending claims in view of the foregoing amendments and the following remarks.

#### Response to Rejections Under Section 103:

Claims 22-24, 26-31, 33-34, 36-39 and 41-45 stand rejected under 35 U.S.C § 103(a) as being obvious over Bruce et al. (USPN 6,686,060) in view of Mansky et al. (USPN 6,668,230), Yokoyama et al. (USPN 5,831,299), Stanley et al. (3,733,887) and Ogawa (USPN 4,794,797).

#### Mansky et al.:

Applicants respectfully submit that Mansky et al. is non-analogous prior art as Applicants invention is directed toward a method for recording microstructural changes in turbine components and Mansky et al. is directed toward electronics testing, in particular a method and apparatus for determining material properties of test samples via a computer controlled array of material test samples arranged on a circuit board/semiconductor for electrical testing. The physical size, weight and processing differences between testing a coating turbine component vs. a circuit board array comprise completely different issues and challenges. Therefore, one of ordinary skill in the art of coated gas turbine components would not look to electronics manufacturing and testing technology to solve the relevant technological issue.

MPEP 2141.01(a) "TO RELY ON A REFERENCE UNDER 35 U.S.C. 103, IT MUST BE ANALOGOUS PRIOR ART." Therefore, Applicant's respectfully submit that Mansky et al. is non-analogous prior art and therefore is not appropriate as references against Applicant's claimed invention.

Furthermore, there is no suggestion or motivation to combine Bruce et al. and Mansky et al, as the combination of Bruce et al. and Mansky et al. would render the Bruce device and the resulting combination inoperable.

Applicant's claimed invention requires the test specimen to be a coated turbine component. Specifically, claim 37 requires a coated gas turbine component to be a turbine blade, vane or a lining of a combustion chamber, and claim 41 requires that the coated gas turbine

component be re-tested after the component has been operated in the turbine. Furthermore, the material properties are to be measured **non-destructively**.

Mansky et al. requires the test specimen to be mounted to a circuit board and then undergo the requisite tests via a computer test apparatus. (col. 10, lines 32-51). Applicants respectfully submit that mounting a coated gas turbine component of Bruce et al., or removing a test sample from the coated gas turbine component for mounting, to the required circuit board of Mansky et al. is destructive in nature and **would render the combination inoperable and/or destroy the functionality of the coated gas turbine component and therefore no longer be suitable for its intended purpose.**

MPEP 2143.01 states:

If proposed modification would render the prior art invention being modified **unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.** *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) [emphasis added]

Therefore, Applicants respectfully submit that the combination of Bruce et al. with Mansky et al. is inappropriate and respectfully request the Examiner withdraw the section 103(a) rejections of claims based upon this combination of references with others.

Yokoyama et al.:

Applicants respectfully submit that Yokoyama et al. is non-analogous prior art as Yokoyama et al. is directed toward an electronic test sensor/memory device, in particular a thin ferroelectric film sensor. As discussed above regarding Mansky et al., one of ordinary skill in the art of coated turbine components would not look to sensor manufacturing and testing technology to solve the relevant technological issue claimed by Applicants.

MPEP 2141.01(a) "TO RELY ON A REFERENCE UNDER 35 U.S.C. 103, IT MUST BE ANALOGOUS PRIOR ART." Therefore, Applicant's respectfully submit that Yokoyama et al. is non-analogous prior art and therefore is not appropriate as references against Applicant's claimed invention.

Furthermore, there is no suggestion or motivation to combine Bruce et al. and Yokoyama et al, as the combination of Bruce et al. and Yokoyama et al. would render the Bruce device and the combination inoperable. The sensor of Yokoyama et al. requires the sensor be attached to the test piece, i.e. the coated component, which would either destroy the operability of the component, the operability of the sensor or both the operability of the coated component and the

sensor, therefore rendering the combination of Bruce et al. and Yokoyama et al. unsuitable for the intended purpose.

One of ordinary skill in the art of coated turbine components immediately appreciates that modern turbo machines operate at temperatures of 1000°C to 1600°C (specification para. 000111) for thousands of hours at a time, which is the underlying need for a thermal barrier coating of the turbine component. Therefore, One of ordinary skill in the art of coated turbine components immediately appreciates that the sensor of Yokoyama et al. would be instantly destroyed during operation of the turbine.

In light of the above, Applicants respectfully submit that the combination of Bruce et al. with Yokoyama et al. is inappropriate in accordance with MPEP 2143.01, and respectfully request the Examiner withdraw the section 103(a) rejections of claims applicable to Yokoyama et al.

Stanley et al.:

Applicants respectfully submit that Stanley et al. is non-analogous prior art as Stanley et al. is directed toward a method and apparatus for determining thermal conductivity and thermoelectric properties of fused quartz and p-type thermoelectric materials.

As discussed above regarding Mansky et al., one of ordinary skill in the art of coated turbine components would not look to fused quartz and p-type thermoelectric material testing technology to solve the relevant technological issue claimed by Applicants.

MPEP 2141.01(a) "TO RELY ON A REFERENCE UNDER 35 U.S.C. 103, IT MUST BE ANALOGOUS PRIOR ART." Therefore, Applicant's respectfully submit that Stanley et al. is non-analogous prior art and therefore is not appropriate as references against Applicant's claimed invention and respectfully request the Examiner withdraw the section 103(a) rejections of claims applicable to Stanley et al.

Ogawa:

Applicant's amended claim 22 recites in part:

... **non-destructively measuring** a material parameter of the component **a plurality of times at differing time points** ...  
**comparing** the plurality of measurements **for a change in material parameter**; and  
**determining if a predetermined threshold percentage change**  
... **is exceeded** based on the comparison of the plurality of measurements.

In contrast, Bruce et al. teaches a coated turbine blade and Ogawa teaches a method and apparatus for measuring piezoelectric and pyroelectric response in materials due to external excitation and does not teach measuring a coated turbine component “...**a plurality of times at differing time points, ...comparing the plurality of measurements for a change in material parameter; and determining if a predetermined threshold percentage change ... is exceeded** based on the comparison of the plurality of measurements” as recited in claim 22.

Applicant’s amended claim 41 recites in part:

...providing a **turbine component ... non-destructively measuring** a material parameter of the component ... **a first time, ...and; non-destructively re-measuring** the material parameter of the component a second time **after the component has been operated in the turbine.**

In contrast, Bruce et al. and Ogawa as discussed above do not teach “... non-destructively measuring a material parameter of the [turbine] component ... **a first time, and...non-destructively re-measuring** the material parameter of the component **a second time after the component has been operated in the turbine**” as recited in claim 41.

Applicant’s respectfully submit that claims 22 and 41 are patentable as well as claims 23-24, 26-31, 33-34, 36-39 and 44-45 which depend thereon at least based in part on their dependence as well as on their own merits.

In light of the above amendments and remarks, Applicants respectfully request the Examiner to withdraw the section 103(a) rejections and timely pass the application to allowance.

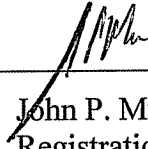
Serial No. 10/589,791  
Atty. Doc. No. 2003P12715WOUS

Conclusion

For the foregoing reasons, it is respectfully submitted that the rejections set forth in the outstanding Office Action are inapplicable to the present claims. Accordingly, Applicants respectfully request that the Examiner reconsider rejections and timely pass the application to allowance. All correspondence should continue to be directed to our below-listed address. Please grant any extensions of time required to enter this paper. The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including fees for additional claims and terminal disclaimer fee, or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

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